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WATER QUALITY ENGINEERING
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November 1, 2004

Mr. Thomas Ballentine, P.E.
Leon County Division of
Environmental Compliance
Department of Community Development
3401 West Tharpe Street
Tallahassee, FL 32303

RE: Progress Report No. 6 for the Lake Lafayette Watershed Study Phase II-A (Leon County Contract No. BC-02-21-01-13) for the Period from December 1, 2003-October 31, 2004

Dear Tom:

Work efforts were continued on Phase II-A of the Lake Lafayette Watershed Study during the above-referenced period. The status of specific tasks outlined for this project are summarized in the following sections.

PHASE II-A

A. Labor

Task 1: Prepare/submit a QAPP to the County who will submit it to the US EPA

1.1 **Prepare/submit QAPP to County/EPA:** Work efforts outlined under this task were 100% complete as of Progress Report No. 1.

Task 2: Install monitoring equipment in Lake Lafayette and provide a report describing these sites

2.1 **Install inflow and outflow monitoring equipment:** Work efforts outlined under this task were 100% complete as of Progress Report No. 2.

2.2 **Install lake level staff gauges and tie them to NGVD datum:**

2.2.1 **Perform elevation surveys**: Elevation surveys for three lake level staff gauges in Upper Lake Lafayette, Lake Piney Z, and Lower Lake Lafayette have been completed by McGlynn Labs. The results of this survey have been provided to ERD by McGlynn Labs. Work efforts outlined under this task are now 100% complete.

2.2.2 **Install staff gauge on east shore of Lower Alford Arm**: A lake level staff gauge was installed by McGlynn Labs on the east shore of Lower Alford Arm near Dr. Alford's home. An elevation survey was performed to tie the staff to NGV datum. The results of this survey have been provided to ERD by McGlynn Labs. Work efforts outlined under this task are now 100% complete.

2.3 **Install a continuous recording rain gauge in the vicinity of the I-10/US-90 intersection:** Work efforts outlined under this task were 100% complete as of Progress Report No. 2.

2.4 **Prepare Monitoring Equipment Installation Report:** The monitoring equipment installation report was prepared by ERD during July 2003 and submitted to Leon County. Work efforts outlined under this task are now 100% complete.

Task 3: **Perform 12 months of monitoring of Lake Lafayette and its tributaries in accordance with the QAPP approved by EPA**

3.1 **Monitor Lake Lafayette's tributaries for 12 months:**

3.1.1 **Perform 12 months of water quality, stream gauge, and flow monitoring**: Continuous monitoring of flow rates and collection of flow composite samples were performed at three major tributaries entering Lake Lafayette from July 2003-August 2004, with monitoring covering approximately a 14-month period. A total of 14 flow composite runoff samples was collected at the Alford Arm monitoring sites, with 20 runoff samples collected from the Tom Brown park site, and 32 flow-weighted composite runoff samples collected at the Weems Road site. Grab samples of dry weather baseflow were also collected at each of the monitoring sites, including the Outfall Canal, on approximately a biweekly basis, with a total of 26 baseflow samples collected at Tom Brown Park, 25 in Alford Arm, 39 at Weems Road, and 27 at the Outfall Canal. Work efforts outlined under this task are now 100% complete.

3.1.2 **Further sampling of the tributaries**: The possibility of performing additional sampling upstream in the monitored tributaries will be discussed with Leon County during December 2004. No work efforts have been performed under this task at this time.

3.1.3 **Analysis of tributary samples for organic compounds**: Samples of baseflow and stormwater collected at the four tributary sites were provided to McGlynn Labs for analysis of organic compounds. According to McGlynn Labs, these analyses have been completed, although no laboratory data have been provided to ERD at this time.

3.2 **Monitor lake water quality:**

3.2.1 **Perform 12 months of water quality monitoring**: Supplemental lake water quality monitoring was performed by McGlynn Labs to supplement the monitoring program currently being performed by McGlynn Labs under contract with the County. Monthly lake water quality monitoring was performed in Lake Piney Z (Station L07), and in Middle Alford Arm (Station L27). Lake water quality monitoring was also conducted in Lower Alford Arm by McGlynn Labs, although the monitoring was performed at a station designated as L25 rather than the L26 station requested by the County. A total of 12 monthly monitoring events has been performed at each of these sites. Work efforts outlined under the supplemental lake water quality monitoring program are now 100% complete.

3.2.2 **Analysis of lake samples for Class III parameters**: According to McGlynn Labs, one sample from each of the four distinct compartments of Lake Lafayette has been analyzed for Class III parameters outlined in FAC 62-302.530. However, no laboratory data have been provided to ERD at this time.

3.2.3 **Collection and analysis of samples at the Sink**: According to McGlynn Labs, two separate water samples have been collected at the Sink and analyzed for all primary and secondary drinking water standards outlined in FAC 62-550.310. Work efforts outlined under this task are now 100% complete. However, no laboratory data have been provided to ERD at this time.

3.3 **Monitor seepage from the WWTP:**

3.3.1 **Perform field reconnaissance of seepage area:** According to McGlynn Labs, seepage areas have been identified adjacent to the Talquin WWTP and a map has been generated which indicates seepage locations. Flow measurements were not performed during the first 8 months of monitoring, but have been performed during the final 4 months of the sample collection program. However, none of this information has been provided to ERD at this time. Therefore, for billing purposes, work efforts outlined under this task are assumed to be 0% complete.

3.3.2 **Collect seepage samples**: According to McGlynn Labs, collection of seepage samples has been completed. However, no information on this collection process or data related to seepage samples has been provided to ERD. Therefore, work efforts outlined under this task are billed at ~~0%~~ 4/12 complete.

3.3.3 **Analyze seepage samples for organic compounds**: According to McGlynn Labs, seepage samples have been analyzed for organic compounds. However, no data has been provided to ERD at this time. Therefore, work efforts outlined under this task are billed at 0% complete.

3.4 **Collect rainfall records and service the rainfall gauge once per month; at the same time, read/record the four lake level staff gauges described in Task 2.-2:** A continuous record of rainfall occurring in the Lake Lafayette drainage basin was collected by ERD from July 1, 2003-August 31, 2004. In addition, continuous records of surface water elevations were conducted at Tom Brown Park, Alford Arm, Outfall Canal, and Weems Pond monitoring sites over the same period. Work efforts outlined under this task are now 100% complete.

3.5 **Conduct sediment sampling:**

3.5.1 **Collect and analyze 30 sediment core samples**: Collection of sediment samples in Lake Lafayette was conducted by ERD during March 2004. A total of 34 separate core samples was collected for analysis. Each of the sediment cores was taken with a split-spoon coring device from the 0-10 cm layer, with triplicate samples collected at each monitoring location. The visual characteristics of the sediment core samples were recorded, and a composite sample was placed into a sample container for further analysis. Each of the collected samples was analyzed for the parameters listed in the Scope of Services. Work efforts outlined under this task are now 100% complete.

3.5.2 Analyze sediment core samples for organic compounds: A portion of the collected sediment samples was submitted to McGlynn Labs for analysis of organic parameters. However, no analyses have been provided to ERD at this time. (Done by ERD)

3.6 Prepare/submit Quarterly Monitoring Reports to the County: Quarterly Monitoring Reports, outlining work efforts performed during the first and second quarters of the field monitoring program and have been prepared and submitted to the County. These reports include tabular summaries of all data collected at the sites and discuss any functional difficulties or QA/QC concerns during the monitoring period. Significant findings from the analysis of the data are also discussed. Work efforts outlined under this task are now 50% complete.

Task 4: Develop and produce a digital vegetative cover map of the four units of Lake Lafayette

4.1 Develop/produce digital vegetative map cover: No work efforts have been conducted under this task at this time.

Task 5: Develop and produce a bathymetric map of the four units of Lake Lafayette

5.1 County GIS will produce bathymetric maps for the Upper Lake Lafayette and Lake Piney Z: No work efforts have been conducted under this task at this time.

5.2 Perform bathymetric surveys of Lower Lake Lafayette and Alford Arm to produce bathymetric maps: A bathymetric survey of Alford Arm and Lower Lake Lafayette has been completed by ERD. A bathymetric contour map and details of technical specifications related to the hydrographic survey will be provided with the quarterly reports. ERD will coordinate with the County GIS to integrate this data into the County GIS. Work efforts outlined under this task are now 80% complete.

5.3 County GIS will provide to ERD stage-area and stage-volume relationships for all of the lakes: No work efforts have been conducted under this task at this time.

Task 6: Propose and perform tests on the Lake Lafayette groundwater system

6.1 Meet with County and other government experts to propose set of tests/observations to determine characteristics of groundwater flow from Lake Lafayette sink to downstream area: No work efforts have been conducted under this task at this time.

6.2 Perform tests and/or observations specified in Task 6.1: No work efforts have been conducted under this task at this time.

6.3 Prepare/submit Groundwater Hydrology Report to County: No work efforts have been conducted under this task at this time.

Task 7: **Hold meeting with County to assess findings of the 12-month monitoring effort**

7.1 **Hold meeting with County:** No work efforts have been conducted under this task at this time.

B. Laboratory Expenses

1. **Stormwater and Baseflow Inorganics**: Overall, a total of 20 stormwater samples has been collected at Tom Brown Park, with 14 in Alford Arm, and 32 at the Weems Road site. A total of 26 baseflow samples has been collected at Tom Brown Park, with 25 composite samples collected in Alford Arm, 39 composite samples collected at the Weems Road site, and 27 composite samples collected at the Outfall Canal. A total of 183 of the 79 proposed stormwater and baseflow samples has now been collected. Of these samples, 100 samples were analyzed by ERD (at no cost to the County) and 83 samples were analyzed by McGlynn Labs.

2. **Stormwater and Baseflow Upstream Analysis - Inorganics**: No samples have been collected under this category at this time.

3. **Stormwater and Baseflow Inflow - Organics**: McGlynn Labs reports that analysis of organic samples have been performed on stormwater and baseflow samples at the tributary sites. However, no data have been provided to ERD at this time.

4. **Surface Water Sample Analysis - Inorganics**: Surface water monitoring has been completed at the three required monitoring sites by McGlynn Labs. A total of 36 separate surface water samples has been collected and analyzed. However, analyses were completed for only 11 of the 15 requested parameters listed in the Scope of Work. Therefore, the sample analysis rate of $180/sample has been adjusted to $132/sample ($180 x 11/15) to compensate for the missing parameters.

5. **Surface Water Samples - Class III Parameters**: McGlynn Labs reports that analysis of Class III parameters has been conducted on surface water samples. However, no data have been provided to ERD at this time.

6. **Sink Water Sample Analyses**: McGlynn Labs reports that sink water samples have been collected and analyzed for primary and secondary drinking water standards. However, no data have been provided to ERD at this time.

7. **WWTP Seepage Water - Inorganics**: McGlynn Labs reports that monitoring of seepage samples at the WWTP has been performed on a monthly basis. However, no data have been provided to ERD at this time.

8. **WWTP Seepage Water - Organics**: McGlynn Labs reports that monitoring of seepage samples at the WWTP has been performed on a monthly basis. However, no data have been provided to ERD at this time.

9. **Sediment Sample Analyses - Inorganics**: A total of 34 sediment samples was collected by ERD and analyzed for inorganic parameters.

10. **Sediment Sample Analyses - Organics**: Sediment samples were provided to McGlynn Labs for analysis of organic parameters. However, no data have been provided to ERD at this time.

C. Reimbursable Expenses

Reimbursable expenses are included for mileage (mileage summary sheet attached) and for monitoring equipment rental.

An invoice for the work efforts listed above is attached. Please review this invoice and, if acceptable, forward to the appropriate department for payment. If you have any questions concerning the status of the project or progress report, please do not hesitate to contact me.

Sincerely,

Harvey

Harvey H. Harper, Ph.D., P.E.
President

Enclosure: Invoice
Job No. 01-016
cc: Dr. Sean McGlynn